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TOWNSEND AND TOWNSEND AND CREW, LLP  
TWO EMBARCADERO CENTER  
EIGHTH FLOOR  
SAN FRANCISCO, CA 94111-3834

EXAMINER
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GILLIS, BRIAN J

ART UNIT	PAPER NUMBER
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2141

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/20/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/656,096

Applicant(s)

IDEI ET AL.

Examiner

Brian J. Gillis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,4-8,10-14 and 16-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-8,10-14 and 16-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2003 and 18 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 22, 2007 has been entered.

### ***Priority***

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on July 11, 2003. It is noted, however, that applicant has not filed a certified copy of the 2003-195451 application as required by 35 U.S.C. 119(b).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 4, 7, 8, 10, 13, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shillo (US PPUB US2003/0110263) in view of Naik et al (US PG PUB US2004/0205206) in view of Huntington et al (US PG PUB US2003/0131098).

Claim 1 discloses a management server connected to a plurality of servers to manage storage areas includes in storage apparatuses as virtual storage areas; wherein said storage apparatuses are shared by said plurality of servers; said storage apparatuses include assignment areas which are storage areas assigned to at least one of said plurality of servers; data stored in said assignment areas of said storage apparatuses includes high-priority data having high priority and low-priority data having low priority; said management server judges whether data to be written in said storage apparatuses is the high-priority data of the low priority data on the basis of a write request of data from one of said plurality of servers and keeps a judgment result and position information of storage areas in which said data is written; and said management server being responsive to an area assignment instruction of storage areas exceeding unassigned areas received from one of said plurality of servers to release at least part of said assignment areas of other servers as unassigned areas and assign released areas to one of said plurality of servers, wherein upon receiving an area assignment instruction, the management server judges whether (i) a size of the unassigned areas exceeds a size of the storage areas specified by said area

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assignment instruction, (ii) a total size of the unassigned areas and unused areas exceeds the size of the storage areas specified by said area assignment instruction, or (iii) a total size of the unassigned areas, the unused areas and storage areas having stored low-priority data exceeds the size of the storage areas specified by said area assignment instruction, and when the condition (iii) is met, said management server releases at least part of storage areas in which the low-priority data is stored, of the assignment areas of other servers as unassigned areas and assigns at least areas to one of said plurality of servers. Shillo teaches storage areas are shared by multiple servers (paragraph 41), the virtual storage pool made by the grouping of the storage resources knows how much space each application is allocated in the pool (paragraph 42), and a re-allocation process takes place to re-allocate unused resources which are assigned to applications (paragraph 43). It fails to teach of data stored in said assignment areas of said storage apparatuses includes high-priority data having high priority and low-priority data having low priority, the server judges whether data to be written in said storage apparatuses is the high-priority data or the low-priority data on the basis of a write request of data from one of said plurality of servers and keeps a judgment result and position information of storage areas in which said data is written, and wherein upon receiving an area assignment instruction, the management server judges whether (i) a size of the unassigned areas exceeds a size of the storage areas specified by said area assignment instruction, (ii) a total size of the unassigned areas and unused areas exceeds the size of the storage areas specified by said area assignment instruction, or (iii) a total size of the unassigned areas, the unused areas

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and storage areas having stored low-priority data exceeds the size of the storage areas specified by said area assignment instruction, and when the condition (iii) is met, said management server releases at least part of storage areas in which the low-priority data is stored, of the assignment areas of other servers as unassigned areas and assigns at least areas to one of said plurality of servers. Naik et al teaches of a server assigns priority based on the user who issued the request and keeps information on the mapping (paragraphs 63, 64, and 69).

Shillo and Naik et al are analogous art because they are both related to managing storage on a network.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the priority flagging and judging in Naik et al with the system in Shillo because inefficient use of available resources and high costs are avoided (Naik, paragraph 71).

Shillo in view of Naik et al teaches of the limitations as recited above. It fails to teach upon receiving an area assignment instruction, the management server judges whether (i) a size of the unassigned areas exceeds a size of the storage areas specified by said area assignment instruction, (ii) a total size of the unassigned areas and unused areas exceeds the size of the storage areas specified by said area assignment instruction, or (iii) a total size of the unassigned areas, the unused areas and storage areas having stored low-priority data exceeds the size of the storage areas specified by said area assignment instruction, and when the condition (iii) is met, said management server releases at least part of storage areas in which the low-priority data is stored, of

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the assignment areas of other servers as unassigned areas and assigns at least areas to one of said plurality of servers. Huntington et al teaches of data is distinguished by priority (paragraph 62) and if free space is needed for a request for storage the server may recycle sections that have low priority data within (figure 5, paragraphs 62, 63, and 69).

Shillo in view of Naik et al and Huntington et al are analogous art because they are both related to managing network storage resources.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the recycling of low priority data storage in Huntington et al with the system in Shillo in view of Naik et al because large numbers of packets may be communicated and stored on a network with minimal user intervention (Huntington, paragraph 5).

Claim 2 discloses a management server according to claim 1, wherein said assignment areas of said storage apparatuses include used areas and unused areas; and said management server includes information for identifying said used areas and said unused areas of said assignment areas; said management server being responsive to an area assignment instruction of storage areas exceeding the unassigned areas received from one of said plurality of servers to release at least part of said unused areas of said assignment areas of other servers on the basis of said identification information as unassigned areas and assign released areas to one of said plurality of servers. Shillo further teaches the virtual storage pool has used and unused areas (paragraph 43), a server can detect how much allocated space each application actually

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uses (paragraph 42), and the managing server reallocates the unused portion of the allocated space (paragraph 43).

Claim 4 discloses a management server according to claim 2, wherein data stored in the used areas in said assignment areas of said storage apparatuses includes high-priority data having high priority and low-priority data having low priority; and said management server judges whether data to be written in said storage apparatuses is the high-priority data or the low-priority data on the basis of a write request of data from said server and keeps judgment result and position information of storage areas in which said data is written; said management server being responsive to an area assignment instruction of storage areas exceeding the unassigned areas received from one of said plurality of servers to release at least part of unused areas and at least part of areas in which the low-priority data is stored, of the assignment areas of other servers as unassigned areas and assign released areas to one of said plurality of servers. Shillo further teaches data stored in assigned areas of devices, and reallocating unused resources already allocated (paragraphs 42 and 43). Huntington et al further teaches of data is distinguished by priority (paragraph 62) and if free space is needed for a request for storage the server may recycle sections that have low priority data within (figure 5, paragraphs 62, 63, and 69).

Claim 7 discloses a storage apparatus system comprising: a storage apparatuses; and a management server connected to a plurality of servers and said storage apparatuses; said management server managing storage areas of said storage apparatuses as virtual storage areas; said storage apparatuses being shared by said



plurality of servers; said storage apparatuses including assignment areas which are storage areas assigned to at least one of said plurality of servers; data stored in said assignment areas of said storage apparatuses includes high-priority data having high priority and low-priority data having low priority; said management server judges whether data to be written in said storage apparatuses is the high-priority data or the low-priority data on the basis of a write request of data from one of said plurality of servers and keeps judgment result and position information of storage areas in which said data is written; said management server being responsive to an area assignment instruction of storage areas exceeding unassigned areas received from one of said plurality of servers to release at least one of assignment areas of other servers as unassigned area and assign released areas to one of said plurality of servers, wherein upon receiving an area assignment instruction, the management server judges whether (i) a size of the unassigned areas exceeds a size of the storage areas specified by said area assignment instruction, (ii) a total size of the unassigned areas and unused areas exceeds the size of the storage areas specified by said area assignment instruction, or (iii) a total size of the unassigned areas, the unused areas and storage areas having stored low-priority data exceeds the size of the storage areas specified by said area assignment instruction, and when condition (iii) is met, said management server releases at least part of storage areas in which low-priority data is stored, or the assignment areas of other servers as unassigned areas and assigns at least areas to one of said plurality of servers. Shillo teaches a managing server and multiple storage devices (paragraphs 41 and 42), the managing server manages a virtual storage pool

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which is a collection of all the storage resources available (paragraph 42), storage areas are shared by multiple servers (paragraph 41), the virtual storage pool made by the grouping of the storage resources knows how much space each application is allocated in the pool (paragraph 42), and a re-allocation process takes place to re-allocate unused resources which are assigned to applications (paragraph 43). It fails to teach of data stored in said assignment areas of said storage apparatuses includes high-priority data having high priority and low-priority data having low priority, the server judges whether data to be written in said storage apparatuses is the high-priority data or the low-priority data on the basis of a write request of data from one of said plurality of servers and keeps a judgment result and position information of storage areas in which said data is written, and wherein upon receiving an area assignment instruction, the management server judges whether (i) a size of the unassigned areas exceeds a size of the storage areas specified by said area assignment instruction, (ii) a total size of the unassigned areas and unused areas exceeds the size of the storage areas specified by said area assignment instruction, or (iii) a total size of the unassigned areas, the unused areas and storage areas having stored low-priority data exceeds the size of the storage areas specified by said area assignment instruction, and when the condition (iii) is met, said management server releases at least part of storage areas in which the low-priority data is stored, of the assignment areas of other servers as unassigned areas and assigns at least areas to one of said plurality of servers. Naik et al teaches of a server assigns priority based on the user who issued the request and keeps information on the mapping (paragraphs 63, 64, and 69).

Shillo and Naik et al are analogous art because they are both related to managing storage on a network.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the priority flagging and judging in Naik et al with the system in Shillo because inefficient use of available resources and high costs are avoided (Naik, paragraph 71).

Shillo in view of Naik et al teaches of the limitations as recited above. It fails to teach upon receiving an area assignment instruction, the management server judges whether (i) a size of the unassigned areas exceeds a size of the storage areas specified by said area assignment instruction, (ii) a total size of the unassigned areas and unused areas exceeds the size of the storage areas specified by said area assignment instruction, or (iii) a total size of the unassigned areas, the unused areas and storage areas having stored low-priority data exceeds the size of the storage areas specified by said area assignment instruction, and when the condition (iii) is met, said management server releases at least part of storage areas in which the low-priority data is stored, of the assignment areas of other servers as unassigned areas and assigns at least areas to one of said plurality of servers. Huntington et al teaches of data is distinguished by priority (paragraph 62) and if free space is needed for a request for storage the server may recycle sections that have low priority data within (figure 5, paragraphs 62, 63, and 69).

Shillo in view of Naik et al and Huntington et al are analogous art because they are both related to managing network storage resources.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the recycling of low priority data storage in Huntington et al with the system in Shillo in view of Naik et al because large numbers of packets may be communicated and stored on a network with minimal user intervention (Huntington, paragraph 5).

Claim 8 discloses a storage apparatus system according to claim 7, wherein said assignment areas of said storage apparatuses include used areas and unused areas; and said management server includes information for identifying said used areas and said unused areas of said assignment areas; said management server being responsive to an area assignment instruction of storage areas exceeding the unassigned areas received from one of said plurality of servers to release at least part of said unused areas of other servers on the basis of said identification information as unassigned areas and assign released areas to one of said plurality of servers. Shillo further teaches the virtual storage pool has used and unused areas (paragraph 43), a server can detect how much allocated space each application actually uses (paragraph 42), and the managing server reallocates the unused portion of the allocated space (paragraph 43).

Claim 10 discloses a storage apparatus system according to claim 8, wherein data stored in said used areas of said storage apparatuses includes high-priority data having high priority and low-priority data having low priority; and said management server judges whether data to be written in said storage apparatuses is the high-priority data or the low-priority data on the basis of a write request of data from one of said

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plurality of servers and keeps judgment result and position information of storage areas in which said data is written; said management server being responsive to an area assignment instruction of storage areas exceeding the unassigned areas received from one of said plurality of servers to release at least part of said unused areas and at least part of areas in which the low-priority data is stored, of the assignment areas of other servers as unassigned areas and assign the areas to one of said plurality of servers. Shillo further teaches data stored in assigned areas of devices, and reallocating unused resources already allocated (paragraphs 42 and 43). Huntington et al further teaches of data is distinguished by priority (paragraph 62) and if free space is needed for a request for storage the server may recycle sections that have low priority data within (figure 5, paragraphs 62, 63, and 69).

Claim 13 discloses a computer program product for a management server which manages storage areas included in storage apparatuses as virtual storage areas, wherein said management server is connected to a plurality of servers; and said storage apparatuses are shared by said plurality of servers through said management server and include assignment areas which are storage areas assigned to at least one of said plurality of servers, wherein data stored in said assignment areas of said storage apparatuses include high-priority data having high priority and low-priority data having low priority; said computer program product comprising: a code for judging on the basis of a write request of data from one of said plurality of servers whether data to be written in said storage apparatuses is said high-priority data or said low-priority data; and a code for information indicative of judgment result and position of storage areas in which

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said data is written; and code for being responsive to an area assignment instruction of storage areas exceeding unassigned areas received from one of said plurality of servers to release at least part of assignment areas of other servers as unassigned areas and assign released area to one of said plurality of servers, wherein upon receiving an area assignment instruction, the code for being responsive to an area assignment instruction judges whether (i) a size of the unassigned areas exceeds a size of the storage areas specified by said area assignment instruction, (ii) a total size of the unassigned areas and unused areas exceeds the size of the storage areas specified by said area assignment instruction, or (iii) a total size of the unassigned areas, the unused areas and storage areas having stored low-priority data exceeds the size of the storage areas specified by said area assignment instruction, and when the condition (iii) is met, said management server releases at least part of storage areas in which the low-priority data is stored, of the assignment areas of other servers as unassigned areas and assigns at least areas to one of said plurality of servers; and a computer readable storage medium for storing said code. Shillo teaches a re-allocation process takes place to re-allocate unused resources which are assigned to applications (paragraph 43), and a computer program product on a computer-readable medium (page 6 #14). It fails to teach of data stored in said assignment areas of said storage apparatuses includes high-priority data having high priority and low-priority data having low priority, the server judges whether data to be written in said storage apparatuses is the high-priority data or the low-priority data on the basis of a write request of data from one of said plurality of servers and keeps a judgment result and position information of storage

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areas in which said data is written, and wherein upon receiving an area assignment instruction, the management server judges whether (i) a size of the unassigned areas exceeds a size of the storage areas specified by said area assignment instruction, (ii) a total size of the unassigned areas and unused areas exceeds the size of the storage areas specified by said area assignment instruction, or (iii) a total size of the unassigned areas, the unused areas and storage areas having stored low-priority data exceeds the size of the storage areas specified by said area assignment instruction, and when the condition (iii) is met, said management server releases at least part of storage areas in which the low-priority data is stored, of the assignment areas of other servers as unassigned areas and assigns at least areas to one of said plurality of servers. Naik et al teaches of a server assigns priority based on the user who issued the request and keeps information on the mapping (paragraphs 63, 64, and 69).

Shillo and Naik et al are analogous art because they are both related to managing storage on a network.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the priority flagging and judging in Naik et al with the system in Shillo because inefficient use of available resources and high costs are avoided (Naik, paragraph 71).

Shillo in view of Naik et al teaches of the limitations as recited above. It fails to teach upon receiving an area assignment instruction, the management server judges whether (i) a size of the unassigned areas exceeds a size of the storage areas specified by said area assignment instruction, (ii) a total size of the unassigned areas and unused

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areas exceeds the size of the storage areas specified by said area assignment instruction, or (iii) a total size of the unassigned areas, the unused areas and storage areas having stored low-priority data exceeds the size of the storage areas specified by said area assignment instruction, and when the condition (iii) is met, said management server releases at least part of storage areas in which the low-priority data is stored, of the assignment areas of other servers as unassigned areas and assigns at least areas to one of said plurality of servers. Huntington et al teaches of data is distinguished by priority (paragraph 62) and if free space is needed for a request for storage the server may recycle sections that have low priority data within (figure 5, paragraphs 62, 63, and 69).

Shillo in view of Naik et al and Huntington et al are analogous art because they are both related to managing network storage resources.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the recycling of low priority data storage in Huntington et al with the system in Shillo in view of Naik et al because large numbers of packets may be communicated and stored on a network with minimal user intervention (Huntington, paragraph 5).

Claim 14 discloses a computer program product according to claim 13, wherein said assignment areas of said storage apparatuses include used areas and unused areas; and said computer program product further comprising: code for information for identifying said used areas and said unused areas of said assignment areas; said code for releasing at least part of assignment areas of other servers as unassigned areas



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including code for being responsive to the area assignment instruction of storage areas exceeding unassigned areas received from one of said plurality of servers to release at least part of said unused areas of other servers as unassigned areas on the basis of said identification information. Shillo further teaches the virtual storage pool has used and unused areas (paragraph 43), a server can detect how much allocated space each application actually uses (paragraph 42), and the managing server reallocates the unused portion of the allocated space (paragraph 43).

Claim 16 discloses a computer program product according to claim 14, wherein data stored in said used areas of said storage apparatuses include high-priority data having high priority and low-priority data having low priority; and said computer program product further comprising: code for judging on the basis of a write request of data from one of said plurality of servers whether data to be written in said storage apparatuses is said high-priority data or said low-priority data; and code for information indicative of judgment result and position of storage areas in which said data is written; said code for releasing at least part of unused areas of assignment areas of other servers as unassigned areas including code for being responsive to the area assignment instruction of storage areas exceeding the unassigned areas received from one of said plurality of servers to release at least part of said unused areas and at least part of areas in which said low-priority data is stored, of the assignment areas of other servers as unassigned areas. Shillo further teaches data stored in assigned areas of devices, and reallocating unused resources already allocated (paragraphs 42 and 43). Huntington et al further teaches of data is distinguished by priority (paragraph 62) and if

free space is needed for a request for storage the server may recycle sections that have low priority data within (figure 5, paragraphs 62, 63, and 69).

Claims 5, 6, 11, 12, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shillo (US PPUB US2003/0110263) in view of Naik et al (US PG PUB US2004/0205206) in view of Huntington et al (US PG PUB US2003/0131098) as applied to claims 1, 7, and 13 above, and further in view of Karpoff (US PG PUB US2003/0135385).

Claim 5 discloses a management server according to claim 1, wherein said management server makes billing processing for each of said plurality of servers utilizing said storage apparatuses at predetermined intervals. Shillo in view of Naik et al in view of Huntington et al teaches of the limitations of claim 1 as recited above. It fails to teach of billing each server for the space used at predetermined intervals. Karpoff teaches of billing customers based on usage following revenue models similar to the telephone industry, which is widely known to bill a customer on a monthly basis (paragraphs 115 and 116).

Shillo in view of Naik et al in view of Huntington et al and Karpoff are analogous art because they are both related to managing storage usage over a network.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the billing engine in Karpoff with the system in Shillo in view of Naik et al in view of Huntington et al because a storage service provider is able to charge customers accordingly for standard and convenient features (Karpoff, paragraph 110).

Claim 6 discloses a management server according to claim 5, wherein said management server establishes different billing amounts depending on where low-priority data is stored and high-priority data is stored. Karpoff further teaches of billing a customer premiums based on fast access (high priority) or archival (low priority) (paragraphs 99 and 106).

Claim 11 discloses a storage apparatus system according to claim 7, wherein said management server makes billing processing for each of said plurality of servers utilizing said storage apparatuses at predetermined intervals. Shillo in view of Naik et al in view of Huntington et al teaches of the limitations of claim 7 as recited above. It fails to teach of billing each server for the space used at predetermined intervals. Karpoff teaches of billing customers based on usage following revenue models similar to the telephone industry, which is widely known to bill a customer on a monthly basis (paragraphs 115 and 116).

Shillo in view of Naik et al in view of Huntington et al and Karpoff are analogous art because they are both related to managing storage usage over a network.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the billing engine in Karpoff with the system in Shillo in view of Naik et al in view of Huntington et al because a storage service provider is able to charge customers accordingly for standard and convenient features (Karpoff, paragraph 110).

Claim 12 discloses a storage apparatus system according to claim 11, wherein said management server establishes different billing amounts depending on where low-priority data is stored and high-priority data is stored. Karpoff further teaches of billing a

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customer premiums based on fast access (high priority) or archival (low priority) (paragraphs 99 and 106).

Claim 17 discloses a computer program product according to claim 13, further comprising: code for causing said management server to execute billing processing for each of said plurality of servers utilizing said storage apparatuses at predetermined intervals. Shillo in view of Naik et al in view of Huntington et al teaches of the limitations of claim 13 as recited above. It fails to teach of billing each server for the space used at predetermined intervals. Karpoff teaches of billing customers based on usage following revenue models similar to the telephone industry, which is widely known to bill a customer on a monthly basis (paragraphs 115 and 116).

Shillo in view of Naik et al in view of Huntington et al and Karpoff are analogous art because they are both related to managing storage usage over a network.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the billing engine in Karpoff with the system in Shillo in view of Naik et al in view of Huntington et al because a storage service provider is able to charge customers accordingly for standard and convenient features (Karpoff, paragraph 110).

Claim 18 discloses a computer program product according to claim 17, further comprising: code for establishing different billing amounts depending on the cases where low-priority data is stored and high-priority data is stored. Karpoff further teaches of billing a customer premiums based on fast access (high priority) or archival (low priority) (paragraphs 99 and 106).

Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shillo (US PPUB US2003/0110263) in view of Naik et al (US PG PUB US2004/0205206) in view of Huntington et al (US PG PUB US2003/0131098) as applied to claim 1 above, and further in view of Honmura et al (US PG PUB US2003/0236790).

Claim 19 discloses a management server according to claim 1, further comprising a storage pool management program, wherein said storage pool management program has at least an unassigned block list and information on a number of unassigned blocks and, when at least said number of unassigned blocks exceeds a size of area assignment requested by said area assignment instruction received from said one of said plurality of servers, determines that the requested area assignment is possible and executes area assignment processing including separating unassigned area of said size from the unassigned block list. Shillo in view of Naik et al in view of Huntington et al teaches of the limitations of claim 1 as recited above. It fails to teach of said program has at least an unassigned block list and information on a number of unassigned blocks and, when at least said number of unassigned blocks exceeds a size of area assignment requested by said area assignment instruction received from said one of said plurality of servers, determines that the requested area assignment is possible and executes area assignment processing including separating unassigned area of said size from the unassigned block list. Honmura et al teaches of judging based on current information if the requested capacity is available and if the area is available the area is assigned to a device (paragraphs 59, 63, and 64).

Shillo in view of Naik et al in view of Huntington et al and Honmura et al are analogous art because they are both related to managing network storage.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the judging and assigning features in Honmura et al with the system in Shillo in view of Naik et al in view of Huntington et al because a storage service is provided which can easily set the capacity of a client (Honmura, paragraph 17).

Claim 20 discloses a management server according to claim 19, wherein said storage pool management program further comprises storage pool assignment information, said storage pool assignment information including information on a number of unused blocks for each virtual storage area and a server from the plurality of servers to which the virtual storage area is assigned, wherein when a total number of said number of unassigned blocks and said number of unused blocks exceeds said size of area assignment requested by said area assignment instruction received from said one of said plurality of servers, said storage pool management program determines that the requested area assignment is possible and executes area return processing including issuing an area return instruction to a server to which a virtual storage area having said number of unused blocks has been assigned. Honmura et al further teaches judging based on current information if the requested area is available and if the area is available a server is notified (paragraphs 59, 63, and 65).

***Response to Arguments***

Applicant's arguments with respect to claims 1, 7, and 13 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Petersen et al (US Patent #6,675,222) teaches of providing a network data switch and buffer system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Gillis whose telephone number is 571-272-7952. The examiner can normally be reached on M-F 7:30-5:00.

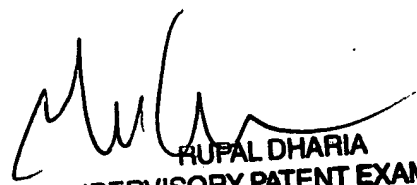
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rupal Dharia can be reached on 571-272-3880. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Brian J Gillis  
Examiner  
Art Unit 2141

BJG



RUPAL DHARIA  
SUPERVISORY PATENT EXAMINER